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The Case of Paris as a European ICT Pole of Excellence

Experts' Insights into Public Policies

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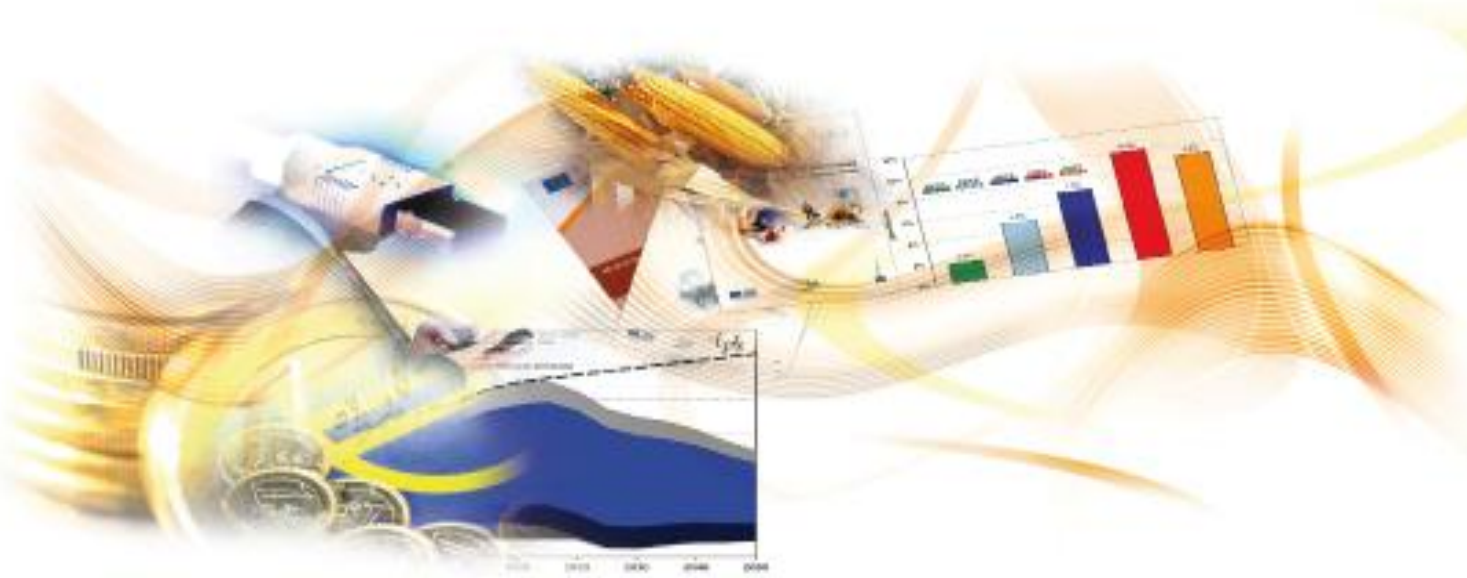

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Preface

The European ICT Poles of Excellence (EIPE) research project is a joint project of DG CNECT and the JRC Institute for Prospective Technological Studies (Project Nr 31786-2010-06). It investigated the issues of growth, jobs and innovation, which have become the main priorities of the European Union's growth strategy programme 'Europe 2020'. The overall objectives of the EIPE project are to set the general conceptual and methodological conditions for defining, identifying, analysing and monitoring the existence and progress of current and future EIPE, in order to develop a clear capacity to distinguish these among the many European ICT clusters, observe their dynamics and offer an analysis of their characteristics.

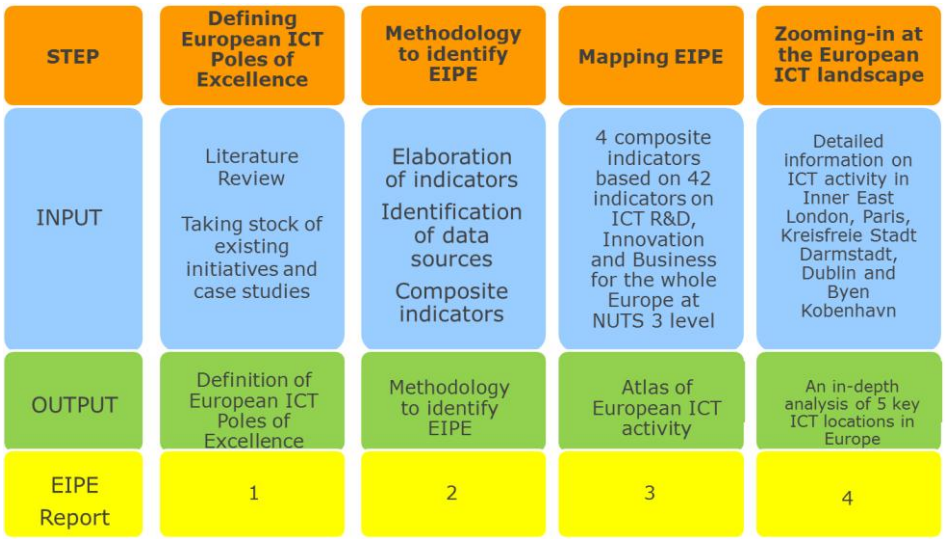
The EIPE project spanned the period between 2010 and 2013. Over this time, it developed a tool based on a database of original ICT activity indicators, which was enriched with geographical information to allow localisation and aggregation at NUTS 3 level. The tool helps to answer such questions as:

- How is ICT R&D, innovation and economic activity distributed in Europe?
- Which locations are attracting new investments in the ICT sector?
- What is the position of individual European locations in the global network of ICT activity?

The EIPE project had four main steps (see Figure 1). First, European ICT Poles of Excellence were defined. Second, a statistical methodology to identify EIPE was elaborated. Third, the empirical mapping of EIPE was performed and fourth, an in-depth analysis of five NUTS 3 regions was undertaken. This work was documented in a series of EIPE reports:

- Defining European ICT Poles of Excellence. A Literature Review,
- Identifying European ICT Poles of Excellence. The Methodology,
- Mapping the European ICT Poles of Excellence. The Atlas of ICT Activity in Europe.
- Analysing the European ICT Poles of Excellence. Case studies of Inner London East, Paris, Kreisfreie Stadt Darmstadt, Dublin and Byen Kobenhavn.
- Key Findings and Implications of the European ICT Poles of Excellence project.

Figure 1: Overview of the EIPE project



More information on the European ICT Poles of Excellence (EIPE) project can be found under: http://is.jrc.ec.europa.eu/pages/ISG/EIPE.html

1. Introduction

This report complements the EIPE case study report. It presents some of the public policies that local experts believe were intended to forge the profile of the ICT activity in **the region of Paris** (code FR101), a NUTS 3 level region.

1.1 Background

This case study presents and analyses the available data gathered throughout the EIPE study about **Paris** (code FR101). It is a NUTS3 level[1] region of Europe.

It is the central part of a broader region, Ile de France (see map), a NUTS 2 level region with the 5th highest level GDP per capita in Europe (Eurostat, 2013).

Paris itself, shown in the map below, is composed of 20 arrondissements. It has a population of around 2.2 million inhabitants.

Henceforth, the report uses the term "Paris" to refer to the NUTS3 level region of Paris.

[1] Nomenclature of Territorial Units for Statistics (NUTS). For a list of the European statistical regions see: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction.
Source of the maps: Google maps and Wikipedia.

1.2 Paris profile in global indexes and EIPE[2]

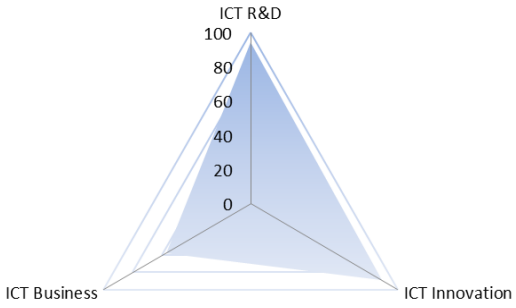
1.2.1 Paris the EIPE ranking

Figure 2 shows Paris's position by individual sub-indicators. According to this information, Paris comes 3rd place in R&D, 4th in innovation and 6th in business activity.

Figure 2: Paris in the EIPE ranking by EIPE composite indicator, ICT R&D, Innovation and Business sub-indicators

Note: The graph shows the performance of Paris in the overall EIPE ranking and the ICT R&D, ICT Innovation and ICT Business ranking. The scale represents the rank in comparison with the remaining 1302 European Nuts 3 regions. For further methodological details please refer to the methodological report documenting the methodology behind the EIPE ranking (De Prato and Nepelski 2013).

Figure 3: Performance of Paris in ICT R&D, Innovation and Business



Note: The graph shows the performance of Paris in the ICT R&D, ICT Innovation and ICT Business rankings. The scale represents normalized scores with maximum 100 and minimum 0. The rankings are based on the analysis of 1303 European Nuts 3 regions. For further methodological details please refer to the methodological report documenting the methodology behind the EIPE ranking (De Prato and Nepelski 2013).

Paris ranks 3rd in the final EIPE ranking, after Munchen Kreisfreie Stadt (1st), and Inner London East (2nd). The EIPE research identifies for Paris the following features:

- *ICT R&D activity:* a diverse public research infrastructure with considerable scientific output, computer science faculties acknowledged for their scientific output, very high private R&D expenditures and ownership of R&D centres. It is one of the major hubs of the European ICT R&D network.

[2] EIPE report available at: http://is.jrc.ec.europa.eu/pages/ISG/EIPE.html

- *ICT innovation activity:* very high investments in intangibles by ICT firms, Nr 2 in Europe in terms of the VC funding, but rather average innovation performance and innovation internationalization.
- *ICT business activity:* a high level of new investments in the ICT sector, a strong business base in the ICT sector, a relatively high level of internationalization of business activity. Paris is one of the key hubs in the ICT business network.

1.2.2 Paris in global indexes

Paris is a world-leading "global city". It seems self-evident that it would have a high ranking as a pole of excellence, if we take into account the size and role of the region and the high concentration of relevant activities such as universities, R&D centres (40% of the researcher in France) and multi-national company headquarters. This legacy of Paris is more important than any public policy as regards clusters. The Île-de-France,[3] still often called "la région parisienne" – a broader geographic area than Paris itself - is the commercial and industrial centre of the France, and also a cultural and intellectual centre of major international influence.

The Paris region, a built-up area representing some 25% of the surface of the broader region Île-de-France, is fertile ground (terreau d'adoption) for the French digital economy, and ranks first for a number of related topics. For instance, it is one of the world's leading centres for research and development in free, or "open source" software. There are more than 250 companies involved in this activity, providing 3 500 jobs, and since 2003, annual business growth has been over 40%.[4] The excellence of its engineering schools helps the region maintain its leading position.

Paris ranks fourth after New York, London and Toronto in the PWC "Cities of Opportunity" 2012 report,[5] but third after Stockholm and Toronto for "intellectual capital and innovation",[6] and second after Beijing for its economic clout.[7] The 2012 PWC report stresses "*Paris's continued strength is the only finding that is as impressive as Asia's dominance. It was number two last year; it is number two this year. It was number two the year before last. But this consistency is hardly an accident: as the capital of the country with the world's fifth largest economy (ahead of both Brazil and the UK), it naturally hosts a large number of Global 500 headquarters and just as naturally is the object of significant foreign investment*".[8] Adding: "*...as Paris proves so well, a city's cultural influence becomes dominant only after it is reinforced by economic power, and cities such as Berlin, Istanbul, and Mumbai need economic strength to bolster their global cultural presence*".[9]

Indeed, Paris is where the large companies (large accounts) are. Because of the concentration of large firms from all the sectors, software companies benefit from better access to vertical markets (automotive equipment, luxury, large retailers, consumer products...). The presence of leading companies (pharmaceutical – Sanofi; energy/chemistry – Total and Air Liquide, and automotive) turns out to be a major advantage for the ICT sectors. This is an ideal situation for a general purpose technology like ICT.

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[3] Île-de-France is a NUTS 2 level region (code FR10) with a land area of 12 011 km2 (4 637 square miles), of which the built-up area of Paris (NUTS 3 - FR101) occupies some 25%. The region is composed of eight departments centred around its innermost department and capital, Paris. Around the department of Paris, urbanization fills a first concentric ring of three departments commonly known as the" petite couronne" ("small ring": Hauts-de-Seine, Seine-Saint-Denis, and Val-de-Marne), and extends into a second outer ring of four departments known as the "grande couronne "("large ring": Seine-et-Marne, Yvelines, Essonne, and Val-d'Oise. *Source*: adapted from Wikipedia.

[4] *Source*: System@tic, http://www.systematic-paris-region.org/

[5] P.10. Available at: http://www.pwc.com/us/en/cities-of-opportunity/assets/cities-opp-2012.pdf

[6] P.16, p. 42.

[7] P.16. p. 72.

[8] P.72.

[9] P.73.

Île-de-France has the highest population density in France with more than 11.6 million inhabitants. Its GDP represents approximately 30% of national wealth and almost 5% of the European Union's GDP.[10] The region has a GDP per capita of €48 400 (much higher than the EU average - €23 500 in 2011).[11] The adequate supply of well-educated workers is often mentioned as one of the main factors needed for a cluster. The very large population concentration in Île-de-France obviously plays an important role. It also has a high concentration of students at university level (642 500 students in higher education in 2011-2012). Consequently, Île-de-France has Europe's highest concentration of R&D: with 5.8% of R&D employment and 7.1% of R&D expenditures in the EU25 in 2009, and 146 300 researchers and technicians in 2010 (Paris Region, 2013).[12]

As noted by Hansen et al (2010: 33), Île-de-France is the largest ICT cluster in Europe. The ICT sector in Île-de-France is largely centred around the City of Paris, Hauts-de-Seine, Yvelines and Essonne. This sector employs nearly 10% of the private sector workforce. The region Île-de-France has focused on strengthening relations between public laboratories and private enterprises. Île-de-France has 36 036 local units engaged in three main categories of the ICT sector: telecommunication activities, IT services and R&D.

This highlights the importance of being part of a densely populated region and the resources this enables. It is not surprising therefore that the Paris region has been classified as an "innovation leader" by the EU Innovation scoreboard 2013.[13]

Table 1: The largest ICT clusters in Europe by employment 2004

Region	Rank	Share of EU ICT Employment	Cumulated Shares
Île-de-France (FR)	1	9.40 %	9.40 %
Lazio (IT)	2	3.64 %	13.04%
Comunidad de Madrid (ES)	3	3.62 %	16.65%
Lombardy (IT)	4	2.74 %	19.39%
Denmark (DK)	5	1.76 %	21.16%
Inner London (UK)	6	1.75 %	22.91 %
Berkshire, Buck. & Oxf. (UK)	7	1.66 %	24.57%
Darmstadt (DE)	8	1.58 %	26.15 %
Oberbayern (DE)	9	1.49 %	27.64 %
Stockholm (SE)	10	1.41 %	29.05 %

Source: Hansen and Serin (2010) based on Barrios et al (2008: 16)

Nor is it surprising that capital regions are rated higher and are far more competitive than other regions, as indicated in the EU Regional Competitiveness Index (2011: 16, 2013: 5). The capital regions are the top performers in most Member States. In France, however, the gap between the capital region and its other regions is particularly large: Paris "leads" French ICT performance though it has not succeeded in driving the whole country to the top level. In fact, France as a whole has a middle ranking in terms of the digital economy, according to a recent report from the French

[10] *Source*: Paris Region: Key Figures 2013.
[11] *Source*: idem.
[12] *Source*: http://www.iau-idf.fr/fileadmin/Etudes/etude_990/Paris_Region_Key_Figures_2013.pdf
[13] P.62. EC (2013), Innovation Union Scoreboard 2013. Available at: http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index_en.htm

Ministry of Finance[14] (IGF 2012 report). This report tells us that France ranked 20th in 2011,[15] behind Germany and the UK but ahead of Italy and Spain. It has held this position since 2007, as opposed to countries like the UK or Israel. The latter has made the digital economy a top priority and has climbed up the rankings (6.5% of GDP and 50/75% of the exports). Japan's ranking, on the other hand, has fallen. In 2011, the five leading countries were: Sweden, Finland, the US, Denmark and Singapore. France's ranking is based on average scores for each of the indicators and sub-indicators: though it not particularly behind in any given sector, it has no particular advantage or high scores either.

The Global Innovation Index 2013[16] (where France still ranks 20th) and OECD data[17] confirm this middle rank. France is classified as an "innovation follower" by the EU Innovation scoreboard 2013[18] - albeit with an above average performance and a stable position on the scoreboard. Its relative strengths are in human resources, its relative weaknesses are in well below average firm investments.[19] Growth performance, however, is well above average. Human resources in the ICT sector are doing rather well but the evolution of the number of computer scientists and university degrees has trailed behind over the last decade. Absolute values for digital training have stagnated and even decreased in relative terms by 3% over the period 2001-2009. The IGF report (Annex VI, p 10) describes France as "*a good pupil unable to become excellent*" even though it has some good assets (high quality education, an increasing number of start-ups, the significant role of public R&D, the digital economy budget line, and very good broadband infrastructure).

[14] «*Le soutien à l'économie numérique et à l'innovation*». A report from Inspection Générale des Impôts, French Ministry of Economy and Finance. Paris, January 2012, 421 p. The authors have built a composite indicator based on three international rankings: the "e-readiness ranking 2010" (The Economist), the Global Innovation Index 2011 (Insead), and the "IT Industry Competitiveness Index 2011" (Business Software Alliance). As of 2011, the five leading countries were: Sweden, Finland, US, Denmark and Singapore. IGF report in the text.

[15] Annex VI, p.1.

[16] The Global Innovation Index (GII). The Local Dynamic of Innovation, 2013, is published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO). http://strat-staging.com/content.aspx?page=gii-full-report-2013/ http://strat-staging.com/content.aspx?page=data-analysis

[17] OECD Key ICT Indicators. http://www.oecd.org/internet/ieconomy/oecdkeyictindicators.htm

[18] P.5.

[19] P. 37.

2. The policy framework and the main public actors

2.1 The legacy of policies

Paris has different layers of history, like for instance the strength of its universities, which dates back centuries. Its R&D concentration is the result of Gaullist policies in the 60s (complex "militaro-industriel"). These policies generated considerable intervention from the French Administration as illustrated by the evolution of Commissariat à l'Energie Atomique (CEA), away from focussing only on defence topics, to creating the LETI in Grenoble, and to becoming a leader in nanotechnologies. However, the "parapublic[20]" ecosystem that characterised France 30 years ago has evolved over the last 10 years, thanks to new public tools such as tax credits for research.

In the early 70s, the notion of clusters surfaced under the label of "Technopolis"[21] inspired by the Japanese and, to a lesser extent, the US models. This decade saw the creation from scratch of Plateau de Saclay, Sophia-Antipolis, Rennes Atalante, Lille-Villeneuve d'Ascq Technopolis. The idea of clusters was anticipated in the 50s and 60s by that of growth poles and development poles. The Plateau de Saclay cluster was a public initiative of the 70s which failed to aggregate enough private firms compared to other clusters (it still had less than 10 in 2011 as against 6,000 in Silicon Valley, 2,000 in Silicon Wadi (Israel), and 1,000 in Kista (Sweden)).[22] Therefore in Saclay, the universities remain the leading players, whereas this is not the case in any of the other leading world clusters: Silicon Valley, Electronics City (Bangalore: India), Kista, Silicon Wadi and East London Tech City, the latter being led by SMEs of the IT sector (in a variety of activities often coined as "Internet economy").

In the 90s, the French administration introduced an industrial cluster policy tool: the local productive system. The resulting clusters, however, were deemed too small and highly heterogeneous: as shown on the map, Paris has the highest concentration of such entities.

The Cepremap econometric survey of local productive systems finds some intra-sector externalities (economies of localization) and inter-sector (economies of urbanization[23]) but is cautious about the direction of causality. The survey shows that, in the case of France, when the level of specialization in a given sector and a given area is doubled, it triggers a 5% increase in productivity which is not insignificant. The process however requires time - over 10 years for a firm to experience benefits from any significant changes in the local economic geography. Moreover, the authors consider clustering to be a secondary factor for growth of value added as compared to capital or labour. However, the conclusions of the authors are similar to previous studies:[24] clusters do bring productivity gains but benefits vary across industries. They stress that the local productive system clusters were created in regions in trouble with lower productivity by attracting weaker firms (with subsidies). As a consequence, no positive impacts were found, or cluster effects, or increase in regional attractiveness. Often the apparent gains were short term and disappeared after 2 years as the companies attracted by the public support were too weak to sustain further growth.

[20] « Parapublic » mixes public and private investments, similar to the Private Public Partnerships (PPP) but broader as not focusing on a specific project/ partnership.

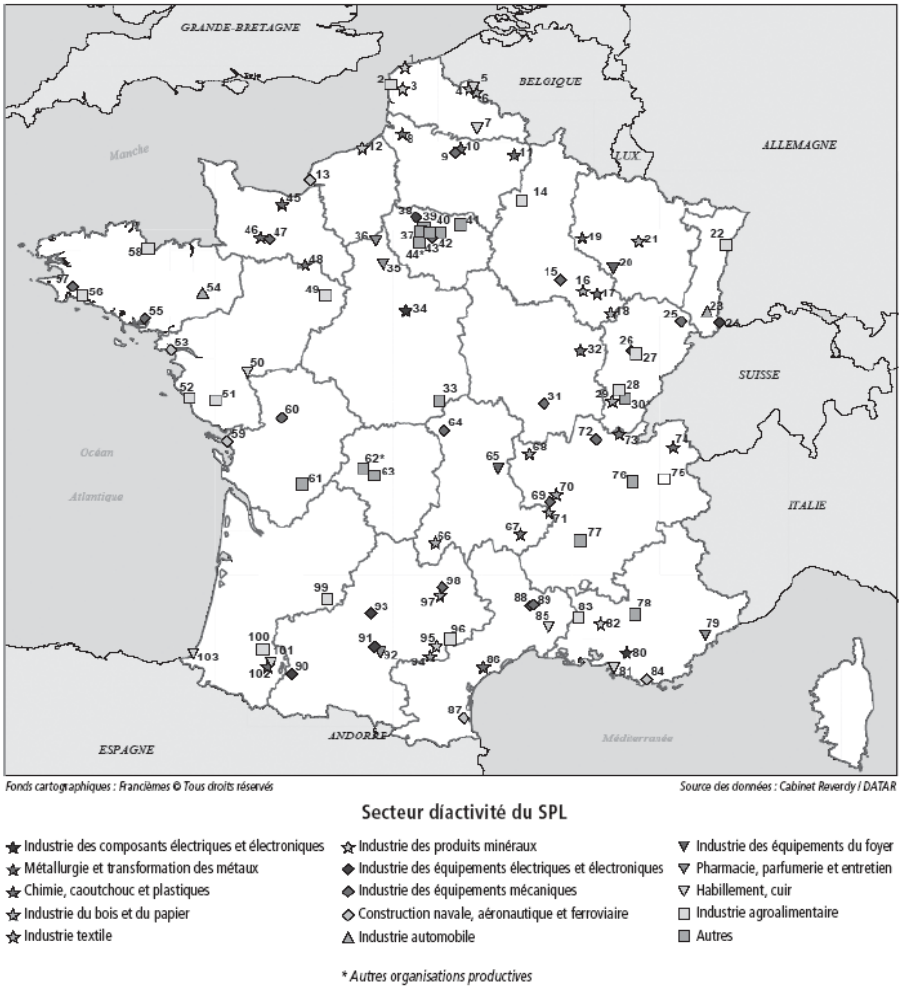
[21] Also called "Zone pour l'innovation et les réalisations scientifiques et techniques "(ZIRST) for some of them like Innovallée near Grenoble created in 1971.

[22] IGF, Annex VI, p.19.

[23] See the section, on agglomeration in De Prato et al (2013).

[24] Henderson, "Marshall's scale economies", *Journal of Urban Economics,* 53, 2003, p.1-28 showing with data between 1972 and 1992 that the high tech sector yields the most important increase f productivity: 8%. F. Cingano, F. Schivardi, "Identifying the sources of the local productivity growth", *Journal of the European Economic Association,* 2 (4), 2004, p.720-742; on the Italian case based on data from the industry.

Figure 4: Local Productive Systems in France in 2005



Source: Cepremap Report (2008: 17).

2.2 Players and tools

The Paris landscape is characterized by a multiplicity of public players of all kinds (government, specialized public entities like Oseo, Caisse des Dépôts et Consignations,[25] Agence Nationale de la Recherche, Fonds stratégique d'investissement, at various levels (local, national, EU[26]), for various types of support (e.g. funding of internationalization: Coface and Oseo), which makes coordination difficult. In the US, many players also intervene but there is clear political monitoring from the executive branch of the Office of Science and Technology which has two newly-created (Obama administration) positions of Chief Technology Officer and Chief Information Officer.

In France, these multiple entities intervene using a number of public tools, but without any specific overall measure designed to promote the digital economy over time. All in all, the contribution to the funding of digital economy was estimated at nearly €3.2 billion in 2011 (€1.3 billion tax concessions and social expenditures, €1.8 billion direct funding), amounting to 3.5% of the estimated value of the digital economy sector.[27] However, there is no consensus on the

[25] Deposits and Consignments Fund: the main financial entity of the French government created in 1816. The group is a long-term investor: this capacity for long-term financial commitment is unique in France.

[26] €205 million in 2011.

[27] IGF, Annex V p.14.

classification of economic activities under "digital" as some of sector-specific "poles de compétitivité" are using digital technologies for their core activity.

The policy emphasis on the digital economy is fairly recent, dating only from the creation of the digital society fund ("fonds national pour l'investissement numérique": FSN, €4.25 billion managed by Caisse des Dépôts) in 2010, within the programme "investments for the future"(Investissement d'avenir).[28] The FSN covers 4 areas: cloud computing (€500/700 million), cultural,[29] scientific or educational contents (€750 million), key enabling digital technologies (€350/450 million), and usages, contents, innovative digital services (€300/400 million for e-health, education, security and resilience of networks, smart transportation; digital cities). However, the FSN section on support to "Usages, contents, innovative digital services", as an industrial policy tool, cannot select the most promising areas and concentrate funding on those areas. In fact, it increases the risk of scattered funding as it concentrates on too many. Furthermore, it strengthens the lack of specialization of the model.

Though this array of tools deals with each step of the innovation process, it places more emphasis on upstream R&D, and far less on the business/markets components, according to experts.[30] Tax instruments are widely used and constitute one of the main levers: tax reductions (tax credit: Credit impôts recherche (CIR),[31] which waive some of the social or income taxes for innovative start-ups),[32] and loans and other grants. Indeed, France ranks first among OECD countries for R&D tax support: over €0.40 out of each €1 spent on R&D. In the US, this is around €0.05, followed by Spain (€0.35) and Portugal (€0.25).[33] Countries like Canada, the Netherlands and the UK focus their tax support on SMEs. In France, support to R&D is given mainly to public research, most of which[34] goes to two main public bodies and their partnerships: CNRS receives €2 493 million (€2 234 million for digital), and the CEA[35] receives €2 465 million (€2 126 million for digital). The headquarters of both public entities are in Paris.

2.3 Changing gear?

The French policy of "pôles de compétitivité" at the beginning of 2000 aimed to achieve the goals of the Lisbon agenda. This policy was deeply influenced by the existing literature on "industrial clusters", according to a report released in 2004.[36] The "poles de competitivité" were designed to fit existing entities and strengthen them. They were inspired by the German Fraunhofer model, which built on the recognition of an existing critical mass. By focusing on selected areas, "Pôles de compétitivité" were supposed to correct the political tendency to scatter the funds, and to mitigate the tendency to mix *cohesion* issues (correcting geographical inequalities: "aménagement du territoire") and economic efficiency. For pre-selected poles such as Toulouse, Grenoble and Limoges (chinaware) and Paris (ICT), the outputs are perceived as positive.[37] All in all, out of the 71 clusters

[28] IGF, Annex V p.8.

[29] For instance, an agreement was struck with the French book publishing trade association (SNE) for the digitization of books released during the 20th century.

[30] See, for instance, Lombard, (2011).

[31] Research tax credit plays a leading role: it is by far the leading public expenditure: €4.4 billion.

[32] "Jeunes enterprises innovantes": €157 million in 2010.

[33] IGF, Annex VI, table 8, p.16.

[34] IGF, Annex V p.9. The national centre for cinema (CNC) spends €73 million in 3 areas: digitization of movie theatres, digitization of films, and support to production for new networks see Box 7, Annex V, p.51.

[35] Civil expenditures only.

[36] Ch. Blanc, « Pour un écosystème de la croissance », Assemblée nationale, rapport au Premier ministre ; « La France, puissance industrielle », Délégation à l'aménagement du territoire et à l'action régionale (Datar).

[37] Interviews.

of the "Poles de Competitivité", 39, including the two in Paris, were deemed to have achieved their goals.[38]

One of the most positive aspects is that a bottom-up approach was taken to gauging the excellence of a "pole de competitivité" whereas a top-down approach was taken to administration/ financing. Among the 71 sector-specific "poles de compétitivité" (€720 million planned expenditures), 13 (€329 million) are classified under ICT with the Île-de-France leading (System@tic €93 million proposed funding, Cap Digital: €59 million) with Minalogic (Grenoble) in between: €64 million.[39] However according to the IGF report, French policy is still characterized by a scattered approach with too many narrowly-defined "pôles de compétitivité", only three of which have produced world-class clusters: Minalogic, Solutions Communicantes Sécurisées, and System@tic. The poles were also useful tools for the French administration's more recent programme "investments of the future".

The two IT cluster initiatives in Paris, Cap Digital and System@tic, differ[40] from standard cluster initiatives (defined usually by a geographical area with a high concentration of companies) as their role is to act as enablers, bridging the gap between innovators and public players, managing the network of players.

These two cluster initiatives manage calls for projects, and forward the selected ones to the administration (inter-ministerial group DGCIS[41]/ Defence/ Research). Their role is not to deal with direct funding but to stimulate, initiate, and promote projects. For example, Cap Digital, helps manufacturers already located in Paris. Direct funding is left to a funding entity (Fonds Unique Interministériel) and other agencies, such as Oseo, that take care of co-financing with additional public authorities (local, regional, EU). This environment creates amplifying effects (more bonuses are available, for instance, from other agencies such as Agence National de la Recherche, ANR). It creates a powerful concentration, which does not happen in French cities without an acknowledged pole, like Montpellier (which has IT companies but is unable to access the subsidies).

System@tic ranks first with 40 000 R&D IT jobs, topping Silicon Valley for R&D because of Haut de Seine, Essonne and research being done in the automotive industry.

Systematic

Systematic is a global competitiveness cluster, created in 2005, dedicated to software and digital technologies, focusing on 6 key areas Automotive & Transport, Free and Open Source Software, Digital Trust & Security, Smart Energy Management, Systems Design and Development Tools, Telecoms.Over 700 partners (including 125 large firms, 460 SMEs, 80 research or higher education institutions, 20 VCs and business angels), 379 R&D projects, 1.97 billion Euros R&D investment: 700 from public authorities (national and regional), 420 000 jobs involved.

Challenges and aims

The primary objective of the SystemaTIC cluster is to raise the global visibility of Paris Region in the design, production and management of complex systems. It also aims to:

- Make businesses more competitive by enhancing their integration into the regional economy
- Consolidate the leadership of large systems integrators
- Boost the number of high-tech SMEs and help them to reach critical mass on a global scale
- Strengthen interaction between large companies and SMEs
- Strengthen interaction between the authorities, prime contractors and subcontractors
- Develop economic activity and employment in Paris Region
- Encourage the creation of start-ups
- Make Paris Region more attractive to investors

[38] BCG. CM International report for the French government « Evaluation des pôles de compétitivité", rapport de synthèse. Available at: http://competitivite.gouv.fr/documents/archivesAncienSite/pdf/synthese_BCG-CMI_evaluation_des_poles_de_competitivite.pdf

[39] Annex V, see Table 15, p.34.

[40] For that reason they were not covered by the IGF benchmark. See Annex VI p.18, only the "plateau de Saclay".

[41] Direction générale de la compétitivité, de l'industrie et des services.

Ouverture Paris Region

Paris Region is one of the world's leading centres for research and development related to free, or "open source", software, with 3,500 jobs, more than 250 companies and annual business growth in excess of 40% since 2003. In 2007, the Ouverture Paris Region project was incorporated into the existing SystemaTIC Paris Region cluster.
The purpose of this project is to bring together key open-source software players in Paris Region, promote the emergence of a healthy and thriving freeware industry, working closely with education and research institutions to encourage the development of innovative freeware applications that reflect the wealth of scientific excellence available in the Region.

The Saclay cluster aims to become a world-leading technological innovation pole with 36 000 faculty members and 58 000 students in 2020.

Source: http://www.systematic-paris-region.org/
http://www.ile-de-france.gouv.fr/gdparis/CLUSTERS

Cap Digital (which aims to encourage the development of a digital content industry) was created out of the blue and became most effective, generating a real federative impact for content SMEs because of its focus on animation, meetings and "research without clear cut R&D activity". This was backed and supported later by the city of Paris. The former Director of Telecom Paristech[42] was a key player, helped by support from the city. High-level executives have been hired. This is very different from the Grenoble case, as it has major players such as ST and CEA-LETI. Cap Digital accompanies the French content start-ups in North America (California, Canada).

Cap Digital

Cap Digital is a competitiveness cluster, created in 2006, with global ambitions. It is dedicated to Information and Communication Technologies and digital content technologies. Cap Digital is one of the biggest European clusters dedicated to digital contents and services.

Challenges and aims

The goal of Cap Digital Paris Region is to establish the region as a leader in digital industries, most importantly by developing the global influence of the region's businesses and universities. The cluster aims to boost the digital content sector by enhancing the creativity and competitiveness of the companies it includes, in particular SMEs, which account for 80% of Cap Digital's members.
Cap Digital is the interface between digital technologies and the six strategic sectors firmly rooted in the Paris Region:
- knowledge engineering,
- digital heritage,
- images, sound and interactivity,
- video games,
- digital education,
- services and practices
- digital design.
- robotics and internet of things
- ICT (Collaborative Technology and Intelligence).

Strategic thrusts

This cluster, which currently has more than 700 members (80% of them VSEs and SMEs, 26 major corporations, 55 institutions of higher education and 12 capital investors), has defined four priorities:
- R&D: out of more than 200 proposals received, Cap Digital has officially designated 100 projects for funding to date. A total of €275 million in private funding and public subsidies has been invested in these projects for research and innovation.
- Management and networking: By providing businesses in the cluster with a structure, support and a real sense of community, Cap Digital encourages the sharing of know-how and cross-fertilisation between the cluster's six activity sectors.
- Company development: The cluster works with public and private-sector funders to find the appropriate finance for its designated projects. With the help of manufacturers and researchers, it identifies the most buoyant markets and the major technological challenges of the future.

[42] Known earlier as ENST or École nationale supérieure des télécommunications, it is one of the most prestigious and selective "grandes écoles" in France. Located in Paris, it is also a member of the prestigious ParisTech and Institut Telecom.

- International deployment: Cap Digital acts as an interface between companies based in the Paris Region and the major European and global economic centres, with a view to setting up international projects. It helps the Region's manufacturers and research teams to become world leaders in their field.

Cap Digital is a founder of, or participates in several major networks of clusters: European Digital Think Tank (www.eudigitalthintank.eu), EIT ICT Labs (http://eit.ictlabs.eu), European Network of Living Labs (ENoLL: www.opencities.net).

Source: www.capdigital.com

A case of local authorities supporting digital: Île-de-France

Both the region (Conseil regional) and the departments (Conseil généraux) co-fund R&D and innovation in partnership with the French administration or the EU (FEDER). They jointly fund the "Fonds unique interministériel" platforms and "poles de compétitivité". The Conseil regional intervenes with: « Aide à la MAturation de projets innovants" (AIMA), "Aides à l'Innovation Responsible » (AIR), a call for project PM'UP. Paris and the Paris department (conseil) support the Paris Region Innovation Lab.

Some examples of amounts spent in 2010-2011 (% of the total):

- Support for "responsible" innovation (sustainable innovation): €1.5 billion (25.9%),
- Support for "maturing" innovative projects: €2.9 billion (51.1%),
- Paris Innovation Amorçage:[43] €1.4 billion (69.4%)

The city of Paris is offering access to offices at low cost in real estate (apartments) owned by the city, affordable for SMEs. This stock of available public buildings, added to the support policies, make it easy for a small company (10-15) to locate in Paris (rather than in Grenoble, for example) especially in the software sector.

Source: IGF report, Annex V, p.3.

The digital economy is climbing up the French policy agenda. A national council for digital issues was created in 2011.[44] In February 2013, the French government released a "digital plan" ("feuille de route numérique")[45] using some of the funds made available through the "investments of the future" programme.[46] The plan consists of 18 actions, among them the creation of 15 digital cities.[47] Paris will be the first in 2013, with a "digital district" located probably in the 13th arrondissement (25 000 square meters renovated to host up to a thousand start-ups). A call for tender "Paris digital capital city" has been launched.[48]

3. Some lessons: the on-going horizontal / vertical policies debate

The French model of public support to the digital economy is difficult to classify according to the IGF report[49] itself, as it fluctuates between two models: a vertical set of specific policies to support technological infrastructure and usages (dominant in countries such as India, South Korea and Sweden), and a horizontal set of policies to create an enabling business environment (as in Germany, Japan, Israel, the United Kingdom and the US).

In France, the support for the deployment of infrastructure is significant. The tax credit tool (CIR) makes a major contribution linked to public R&D. Firms may benefit from an array of public support

[43] Preliminary fund after incubation and "love money" from families and friends.

[44] Conseil national du numérique: http://www.cnnumerique.fr/home-2/

[45] http://www.gouvernement.fr/premier-ministre/le-gouvernement-presente-la-feuille-de-route-pour-le-numerique. And a 46 p. document, available at: http://www.gouvernement.fr/sites/default/files/fichiers_joints/feuille_de_route_du_gouvernement_sur_le_numerique.pdf

[46] Digital cities were already included.

[47] Under action 2: "RENFORCER LA COMPÉTITIVITÉ DE NOS ENTREPRISES GRÂCE AU NUMÉRIQUE", p. 5. and 4 « measures » see Annex, p.1.and pp. 28-34 for a detailed presentation. South Korea initiated a plan for « Ubiquitous City » or « U-City » and also a plan to build 15 cities..

[48] http://proxy-pubminefi.diffusion.finances.gouv.fr/pub/document/18/14230.pdf

[49] Inspection Générale des Impôts (IGF), French Ministry of Economy and Finance. Paris, 2012.

from direct funding (subsidies) to guarantees and loans. There is also a long-standing commitment to an industrial cluster policy. It is said, however, that this policy translates into too many IT clusters, none of which reach the critical size to become world-class. They therefore lose some visibility in that process. At best, they are expected to reach a decent size at the EU level. In addition, the large number of players and tools involved, even after some streamlining,[50] does not facilitate the visibility of a digital strategy.

No specific means have been designed for Paris, and national schemes are being applied there. Public funding plays a positive but not apparently determinant role. Nonetheless, the Paris ecosystem has developed rather well over the last 8 years.

The IGF carefully notes that it is difficult to determine whether the "private" cluster would have grown anyway without government intervention. For instance, the success of the meeting place for innovators to network, "La cantine"[51] (created by the present Chairman of Cap Digital) has more to do with the specific local dynamics of the sector. In any case, it looks as though a first private intervention is fundamental: it is claimed that a large firm will later aggregate smaller firms, if this large firm is able to build an SME-friendly ecosystem.[52]

Public policies (national/local), however, have offered a good start, a good blend of elements and adequate funding but it is said that they lack an analysis of goals and usually lose track of the market. Hence, there is a paradox for Paris: public policies have triggered a lot of projects, but none of these appears to be profitable. In addition, public policies are still fragmented.

The Cepremap report (Duranton et al., 2008) states some even stronger conclusions: "*you don't legislate clusters*" ('les clusters ne se décrétent pas") and calls for caution: "*no miracle to be expected from the poles de competitivité*". Such an assessment does not invalidate public policies, but it invites policy makers to choose them with care. Should they propose subsidies to grow the size and the concentration of firms, or should they create optimal business conditions and limit hurdles to growth?[53] French policy makers seem to favour the former, a vertical approach. Duranton et al suggest that better attention should be paid to the latter.

D. Lombard (2011: 178) argues in favour of the horizontal conditions-enabling policies, arguing that public investment in R&D is not big enough to become the engine of all R&D. Hence part of the solution has to do with the creation of a favourable business environment to stimulate national or EU global champions in the IT/high-tech sectors. This view is shared by the IGF report which concludes that the Government alone should not try to create dynamic clusters of any relevant size: private players remain the key to creating economic activity and bringing incentives for other players (SMEs, research centres, incubators). However, paradoxically, the same report points to the weakness of private investments in the case of France, which prevents reaping the full benefit of public support.

All in all, in the case of Paris, as noted by Hansen et al, already quoted, the strengths and the resources of this "global city" show that flexibility in terms of policies is required and that room should be given to local players to build on the pre-existing strengths.

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[50] Creation of the Banque Publique d'Investissements bringing together Oseo, FSI and related department of the Caisse des Dépôts (CDC Entreprises) in 2012. It is too early to assess the role of the just created Banque Publique d'Investissements. http://www.bpifrance.fr/

[51] Or others like Silicon Sentier, le Camping.

[52] This view is backed by the "godfather" of clusters, M. Porter (Porter, 2000: 26), who stresses the need for some initial seeds to pass the market test.

[53] This is similar to the classification proposed by the IGF report (subsidies for growth v. enabling policies).

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Paris Region

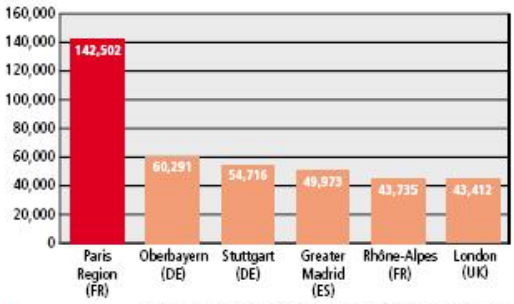
European Leader in R&D

Research and development

PARIS REGION: THE EUROPEAN LEADER IN R&D

- Paris Region is Europe's no. 1 region in terms of R&D capability with 143,800 people working in research (142,500 in 2007), including 89,540 researchers.
- Public and private R&D expenditure totalled 16.4 billion in 2008 (15.8 billion in 2007).
- Paris Region recorded the highest number of both patent applications (1,900) and high-tech patent applications (470) in 2007.

Top EU regions in terms of total R&D personnel in 2007 (total number in full-time employment)



Sources: Eurostat and Ministry of Higher Education and Research

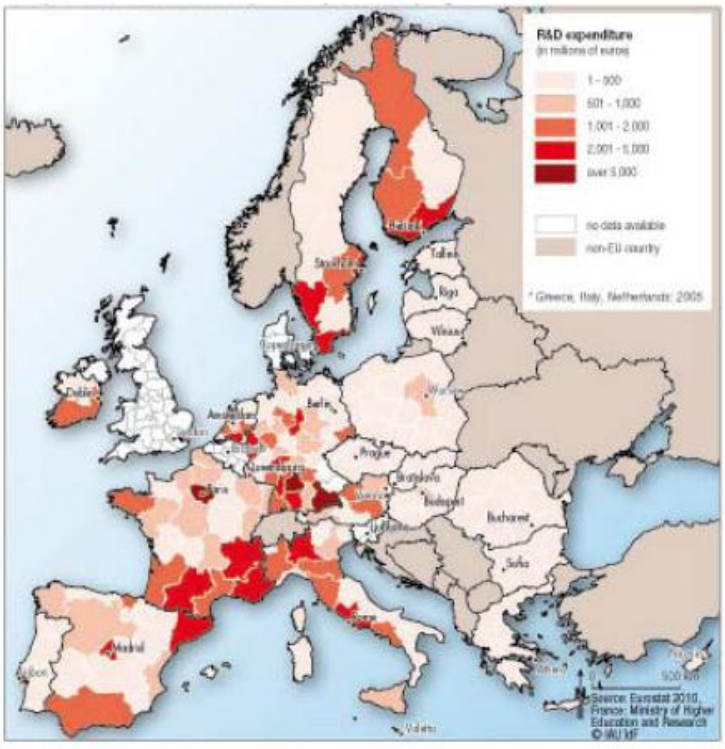
European Research and Development expenditure in 2007

(€ million)

Paris Region (FR)	15,765
Stuttgart (DE)	8,443
Oberbayern (DE)	7,784
Darmstadt (DE)	4,678
Rhône-Alpes (FR)	4,587
London (UK)	4,493

Sources: Eurostat and Ministry of Higher Education and Research

European research and development expenditure by region in 2007*



PUBLIC RESEARCH

- Total expenditure: €5.7 billion.
- In 2008, public research accounted for 57,900 jobs (full-time equivalent), including 34,300 researchers (60% are researchers).

PRIVATE RESEARCH

- Total expenditure: €10.7 billion.
- In 2008, private research accounted for 86,900 full-time equivalent jobs, including 55,200 researchers (64% are researchers).

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Research and development

PARIS REGION: 9 COMPETITIVENESS CLUSTERS

In 2005, the French government launched its competitiveness cluster strategy with the aim of bringing together business, research centres and training bodies to unlock synergies and stimulate the emergence of collaborative, and, above all, innovative projects, in the face of increased global competition. These clusters strengthen Paris Region's competitive position on the world stage by encouraging research and innovation.

- 9 clusters: Advancity, ASTech, Cap Digital, Cosmetic Valley, Elastopole, Finance Innovation, Medicen, Mov'eo, and Systematic.
- More than 1,000 projects financed.
- Total investment of €3,210 million including €1,230 million of public funding.

Paris Region Competitiveness clusters in 2010

Cluster name	Sector	Website	Members	Number of projects financed	Total investments (€ million)	Total public sector funding (€ million)
Advancity	Sustainable urban development, housing and construction, mobility, eco-technologies	www.advancity.eu	195	97	200	87
ASTech	Business aviation, space transportation. Propulsion systems and equipment.	www.pole-astech.org	194	25	130	60
Cap Digital Paris Region	ICT, digital content technologies	en.capdigital.com/	600	300	600	275
Cosmetic Valley	Perfumes and cosmetics	www.cosmetic-valley.com	445	65	110	21
Elastopole	Rubber and polymers	www.elastopole.com	89	12	23	11
Finance Innovation	Banks and investment companies, insurance, investment management, services to the finance sector	www.finance-innovation.org	247	21	17	7
Medicen Paris Region	Innovative therapies and advanced technologies in healthcare	www.medicen.org	190	152	330	157
Mov'eo	Automotive sector, public transport, road safety and environment	www.pole-moveo.org	293	112	700	190
Systematic Paris Region	Automotive and transport, free and open source software, security and defence, systems design and development tools, telecoms	www.systematic-paris-region.org	596	248	1,100	420
TOTAL			2,849	1,032	3,210	1,228

Sources : Advancity, ASTech, Cap Digital, Cosmetic Valley, Elastopole, Finance innovation, Medicen, Mov'eo, Systematic

PSA Peugeot Citroen – © Patrick Lagos

Paris Region

- **Europe's leading R&D region**
- **Europe's no.1 region for R&D expenditure**
- **Europe's no.1 region for R&D personnel (full-time equivalent)**

13

Source: www.iau-idf.org

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Abstract
The European ICT Poles of Excellence (EIPE) project is a joint research project of DG CNECT and the JRC Institute for Prospective Technological Studies. It established the conditions for defining, identifying, analysing and monitoring the existence and progress of current and future European ICT Poles of Excellence (EIPE), in order to distinguish these among the many European ICT clusters, observe their dynamics and offer an analysis of their characteristics.
A case study report investigates 5 selected EIPEs – Inner London East, Paris, Kreisfreie Stadt Darmstadt, Dublin and Byen Kobenhavn. It presents and interprets the data collected during the course of the project to understand the actual facts, context and story of each location, i.e. its R&D, innovation and business activity.
The case study report is complemented by 4 short notes, which offer the summarised views of local experts on the role played by public policies in the emergence and the sustainability of ICT activity in their region. This note is about Paris.

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